**Lesson Plan**

**Name of Faculty :- POONAM SHARMA**

**Discipline :- Electrical Engineering**

**Semester :- 2ND Semester**

**Subject :- ELECTRICAL NETWORK**

**Lesson Plan Duration:- 15 Week( 6TH MARCH TO 23 JUNE 2023)**

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| **Week** | **Theory** | **Practical** |
| **1st** | **Lecture Day** | **Topic** | **Practical Day** | **Topic** |
| **1st** | **DC Network Theorems*** 1. INTRODUCTION
 | **1st**E1/E2 | 1. Use voltmeter, ammeter to determine current through the given branch of a electric network by applying mesh analysis. |
| **2nd** | * 1. Mesh analysis
 |
| **3rd** | * 1. Nodal analysis using voltage and current sources
 | **2nd**E1/E2 | 2.Use voltmeter, ammeter to determine current through the given branch of a electric network by applying node analysis.. |
| **2nd** | **1st** | * 1. Superposition theorem
 | **1st**E1/E2 | 3.Verification of Superposition Theorem. |
| **2nd** | * 1. Thevenin theorem
 |
| **3rd** | * 1. Norton theorem
 | **2nd**E1/E2 | **4.** Verification of Thevenin’s theorem.method. |
| **3rd** | **1st** | * 1. Maximum power transfer theorem
 |  | 5. Verification of Norton’s Theorems. |
| **2nd** | * 1. Active and passive network, Linear and Non Linear network
 |
| **3rd** | REVISION CHATER 1 | **2nd**E1/E2 | 6. Verification of Maximum Power transfer Theorem.. |
| **4th** | **1st** | **AC Fundamentals**Generation of alternating Voltage and current. | **1st**E1/E2 | 7. Observe the wave shape of an alternating supply on CRO and calculate average, RMS value, frequency and time period. |
| **2nd** | * 1. Difference between ac and dc, Equation of alternating quantity.
 |
| **3rd** | * 1. AC Terminology: waveform, cycle, frequency, time period, amplitude, instantaneous value, alternation, and their important relations (time period and frequency, angular velocity and frequency etc.)
 | **2nd**E1/E2 | 8 .Measure input current, power, power factor of R-L series circuit and draw the power triangle. |
| **5th** | **1st** | * 1. Values of alternating voltage and current: Instantaneous value, peak value average value,

r.m.s. value, form factor and peak factor | **1st**E1/E2 | 1. Measure input current, power, power factor of R-C series circuit and draw the power triangle.
 |
| **2nd** | * 1. Vector representation of alternating quantities
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| **3rd** | * 1. Concept of phase, phase difference and phasors
 | **2nd**E1/E2 | 1. Measure input current, power, power factor of R-L-C series circuit and draw the power triangle.

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| **6th** | **1st** | * 1. Representation of electrical quantities through phasors
 | **1st**E1/E2 | 1. Use variable frequency supply to create resonance in given series R-L-C circuit or by using variable inductor or variable capacitor.
 |
| **2nd** | * 1. Addition of two alternating quantities: parallelogram method, component method
 |
| **3rd** | REVISION | **2nd**E1/E2 |  1. To determine current, p.f., active, reactive and apparent power in R-C parallel A.C. circuit.

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| **7th** | **1st** | UNIT III**Single Phase AC Series Circuits*** 1. A.C circuit containing pure Resistance, Inductance, Capacitance with the concept of power consumed, phase Angle, inductive and capacitive reactance etc.
 | **1st**E1/E2 | 1. To determine current, p.f., active, reactive and apparent power for given R-L-C parallel circuit with series connection of resistor and inductor in parallel with capacitor.
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| **2nd** | UNIT III**Single Phase AC Series Circuits*** 1. A.C circuit containing pure Resistance, Inductance, Capacitance with the concept of power consumed, phase Angle, inductive and capacitive reactance etc.
 |
| **3rd** | * 1. AC series circuit: R-L, R-C, along with the concept of phasor diagram, phase angle , Impedance, impedance triangle, power, power triangle etc.
 | **2nd**E1/E2 | 1. Use variable frequency supply create resonance in given parallel R-L-C circuit or by using variable inductor or capacitor.
 |
| **8th** | **1st** | * 1. AC series circuit: R-L-C along with the concept of phasor diagram, phase angle , Impedance, impedance triangle, power, power triangle etc.
 | **1st**E1/E2 | 1. Verify the relationship between phase and line values of current and voltages and power in balanced and unbalanced star connected load.
 |
| **2nd** | Concept of True power, apparent power and reactive power, Power factor and its significance, |
| **3rd** | * 1. disadvantages of low power factor, cause of low power factor, improvement of power factor.
 | **2nd**E1/E2 | 1. Verify the relationship between phase and line values of current and voltages and power in balanced and unbalanced delta connected load.
 |
| **9th** | **1st** | * 1. Active and reactive components of current
 | **1st**E1/E2 | REVISION PRACTICAL |
| **2nd** | * 1. Resonance in RLC series circuit, Quality (Q) factor
 |
| **3rd** | **REVISION** | **2nd**E1/E2 | REVISION PRACTICAL |
| **10th** | **1st** | UNIT IV**Single Phase AC Parallel Circuits*** 1. Concept of AC parallel circuit
 | **1st**E1/E2 | REVISION PRACTICAL **-** |
| **2nd** | * 1. Methods of solving parallel AC circuit: vector method, admittance method, symbolic or J-method
 |
| **3rd** | * 1. Methods of solving parallel AC circuit: vector method, admittance method, symbolic or J-method
 | **2nd**E1/E2 | REVISION PRACTICAL**- do--** |
| **11th** | **1st** | * 1. Parallel Resonance, Q-factor
 | **1st**E1/E2 | REVISION PRACTICAL |
| **2nd** | * 1. Comparison of series and parallel resonance.
 |
| **3rd** | * 1. Introduction to transient and Harmonics in A.C. circuits
 | **2nd**E1/E2 |  |
| **12th** | **1st** | REVISION | **1st**E1/E2 | REVISION PRACTICAL |
| **2nd** | UNIT V**Polyphase Circuit*** 1. Principle of generation of 3 –ø alternating emf.
 |
| **3rd** | * 1. Advantages of Polyphase circuit over single phase circuit, Phase Sequence.
 | **2nd**E1/E2 | REVISION PRACTICAL |
| **13th** | **1st** | Types of three phase connections-Star connection and delta connection | **1st**E1/E2 | REVISION PRACTICAL |
| **2nd** | * 1. Concept of balanced and unbalanced load.
 |
| **3rd** | Relation between phase and line quantities of star and delta connection | **2nd**E1/E2 | REVISION PRACTICAL |
| **14th** | **1st** | REVISION  | **1st**E1/E2 | REVISION PRACTICAL |
| **2nd** | REVISION  |
| **3rd** | REVISION  | **2nd**E1/E2 | REVISION PRACTICAL |
| **15th** | **1st** | REVISION  | **1st**E1/E2 | REVISION PRACTICAL |
| **2nd** | REVISION  |
| **3rd** | REVISION  | **2nd** | REVISION PRACTICAL |